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ABSTRACT

The effects of a competency based intervention strategy on selected behaviors of student teachers in physical education were investigated to determine if there was any subsequent change in two categories of pupil behavior. Subjects received a competency based package, which included specific instructions, a reading sheet, graphic feedback, cues, reinforcement, and weekly goals. Rates per minute for selected teacher behaviors and the percentage of pupils engaged in the two pupil behavior categories were plotted to form a profile of both teaching and pupil behaviors. These profiles illustrated the way teachers and pupils behaved in the physical education environment during both pre-intervention and intervention conditions. Significant increases were observed in both teachers' positive behaviors and pupils' engagement in appropriate behavior. (JD)

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A Competency-Based Approach to Secondary* Student Teaching in Physical Education

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During the past decade, our public and private educational institutions have received numerous criticisms from a variety of sources (Kohl, 1967; Holt, 1969; Postman and Weingartner, 1969; Silberman, 1970; and Illich, 1970). Complaints have focused on the environment being aversive and based on fear, the curriculum being irrelevant to society's needs, the numerous social problems, "mindless" learning, and poor performance of students on standardized tests. Needless to say, the views of American citizens toward public education are not totally favorable in regards to the impact that the schools have had upon their children (Gallup, 1978).

It has recently been pointed out that teacher educators and their programs should assume a portion of the responsibility for what is occurring in our schools (Feingold, 1972). Discussion has centered on the notion that many of the schools' problems are caused or are perpetuated by inadequately prepared teachers. These thoughts plus the reduction in educational budgets, and the increased emphasis on accountability in education have forced teacher educators to carefully examine new models of training teachers.

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The performance or competency based approach to teacher education (CBTE) has received a great deal of visibility in higher education (Elam, 1972; and McDonald, 1974). It is estimated that more than six hundred institutions are working toward a performance or competency based program (Kay and Rosner, 1973). This CBTE movement has brought attention to critical issues in teacher education, i.e., teaching competencies, assessment procedures, etc. The model places importance on demonstrated teacher competencies in the areas of knowledge, performance, and consequences of performance on pupil behavior. Another important aspect of the model requires prospective teachers to exhibit certain competencies in a classroom or gymnasium situation.

The CBTE approach certainly has many problems and critics (Brody, 1972 and Rosner, 1972). An unresolved issue is the lack of a research base for the model, especially in the area of the relationship between instructional variables and academic achievement. Research strategies should be generated for identifying teaching competencies, developing assessment systems, and exploring the relationship between teacher behavior and pupil behavior.

REVIEW OF LITERATURE

The competency based format has a limited research base, especially in the area of the relationship between teacher behavior and student behavior (Good, et.al., 1975). The few studies that have been conducted seem to indicate that a competency based approach to training teachers will produce a higher increase in knowledge, attitudes or performance (Crain, 1973; Hurst, 1973; and Miles, 1973).

The heart of the CBTE model, which explores the relationship of teacher behavior and student behavior, has generated few studies (Hamilton, 1974; Darst, 1974; and Boehm, 1974).

PURPOSE

The purpose of this study was to investigate the effects of a competency based intervention strategy on selected behaviors of seven student teachers at the secondary level in physical education and to determine if there was any subsequent change in two categories of pupil behavior.

METHODS AND PROCEDURES

The subjects were four males and three females all enrolled in their secondary school student teaching experience at Arizona State University. All subjects were physical education majors with a limited amount of teaching experience. The normal procedures for placing student teachers in the public schools were followed for each subject.

The pupil behaviors were recorded by a technique called placheck recording (Siedentop, 1976). Placheck recording consists of making a tally, at a designated time, of the number of pupils engaged in a defined behavior. This tally is then divided by the total number of pupils in the class and then multiplied by one-hundred in order to determine the percentage of pupils engaged in the defined behavior. The categories of pupil behavior were called active/inactive behavior and appropriate/inappropriate behavior. Active behavior referred to throwing, catching, dribbling, running, spotting and other physically

active behaviors. Inactive behavior focused on waiting in line, listening to a lecture, standing on the sidelines and other behaviors where the pupils were not physically involved. Appropriate behaviors referred to carrying out instructions, helping a classmate, listening to a lecture or any other behaviors that seemed to enhance the educational environment. The inappropriate behaviors included: talking out of turn, failure to follow directions, pushing a classmate and any other behaviors that seemed to detract from the environment.

Teacher behaviors were recorded by a technique called event recording which consists of making a tally of every predefined behavior as the behavior occurs. The categories of teacher behavior that were recorded are briefly defined as follows:

1. Positive Reactions to On-Task Pupil Behavior -- This category included all positive verbal teacher reactions to on-task pupil behavior other than movement skill attempts. Examples included praising a class or student for dressing quickly, changing activities, following directions, cooperating, showing emotional control, etc.

2. Negative Reactions to Off-Task Pupil Behavior -- This category included all negative or scolding verbal teacher reactions to off-task pupil behavior other than movement skill attempts. Examples included scolding pupils for not listening, not following directions, not getting to class on time, not dressing properly, not cooperating, etc.

3. Positive General Feedback for Movement Skill Attempts -- This category included all positive, non-specific teacher reactions to a pupil's movement skill attempts. Examples included, "Nice job, Mike," "Way to go, girls," "Jim, you sure are working today," and "Good hit, Larry."

4. Positive Specific Feedback for Movement Skill Attempts -- This category included all positive teacher reactions to pupil's movement skill attempts that conveyed precise, specific informatio Examples included praising pupils for keeping their arms st at on a volleyball bump, getting good height on a shot put th or having a correct follow through in a golf swing.

5. General Corrective Feedback for Movement Skills -- This category included all general corrective or negative teacher reactions to pupil's movement skill attempts. Examples included, "Mary, that is wrong," "No, Rick," or "You people are all doing this incorrectly."

6. Specific Corrective Feedback for Movement Skills -- This category included all precise, specific corrective or negative teacher reactions to pupil's movement skill attempts. Examples included telling pupils that they did not keep their arms straight, they did not bend their knees enough, or that their follow through was too short.

7. Pupil's First Names -- This category included all teacher initiated contacts with pupils that included the pupils' first names. This category did not include contacts using the pupils' last names.

The format for the observation sessions was as follows:

Event Recording	Rest	Placheck	Rest	Placheck
(Teacher Behavior)		(Active/Inactive)		(App/Inapp.)
3 minutes	10 Sec.	10 Sec.	10 Sec.	10 Sec.

This cycle was then repeated for the remaining time in each class period. A digital stopwatch was used to cue the experimenter when to begin and end recording.

In order to assure that there was a change in the subjects' behavior, and not a change in the experimenter's recording of the behavior, reliability checks were made during both baseline and intervention conditions. At least three reliability checks were made on each subject by situating the experimenter and another trained observer at distant points of the gymnasium or playfield. The reliability was then determined by dividing the agreements by the sum of the agreements and disagreements and then multiplying by one-hundred.

Baseline rates of behavior were established when the majority of behaviors showed no evidence of an ascending or descending rate for at least three observation sessions. The baseline rates of behavior for subject one were established after three sessions and the remaining six subjects' baselines were established by adding one session for each subject. (Figure 1)

Insert Figure 1

The intervention was introduced after a baseline was established for a subject. The intervention strategy consisted of a competency based package which included specific instructions, a reading sheet, graphic feedback, cues, reinforcement, and weekly goals which progressed toward a terminal goal. The reading sheet included definitions of the observed behaviors and an explanation on the value of those behaviors in an educational setting. Subjects were also given a series of graphs which illustrated their baseline rates of each behavior. The experimenter provided instructions and cues for how, when, and where to use specific teaching behaviors. Weekly and terminal goals were set for each subject depending upon the nature of the teaching situation, the abilities of the subject, and the behavior of the pupils in each school. The goals were set progressively in an ascending or descending manner relative to each specific behavior. After subjects attained a specific goal, the experimenter praised and encouraged the efforts of each subject. After the terminal goal was accomplished, the subjects were asked to maintain that rate per minute or percentage.

Because of the applied nature of this study, a multiple baseline design (Sulzer-Azaroff and Mayer, 1977) was used for data analysis. This design can be used to show causality without having to reverse important gains in behavior. For example, if subjects show changes in the same behavior immediately after intervention and the intervention is introduced at different times, the hypothesis that the intervention caused the change is strengthened. The multiple baseline design can be used to analyze the same behaviors of two or more subjects (Rife and Dodds, 1978).

The competency based treatment or intervention was considered as a "package" because there were a number of variables involved. This "package" treatment approach has been criticized because it is not possible to sort out the effects of each variable (Kazdin, 1973). Others have pointed out that behavioral research is concerned with procedures used to change behavior and that if a "package" does affect specific behaviors, then the importance of each variable within the "package" can be analyzed in further research (Wolf, et.al., 1973).

The "significance" of results in single subject research refers to a comparison between the behavior change and the level necessary for social usefulness (Risley, 1969). Social usefulness is determined by those people that deal directly with the behavior. Baer (1972) also states that "significance" refers to changes that are important to the client. In this study, changes in student teacher and pupil behavior were judged to be "significant" by the university supervisor, the cooperating teacher, and the student teacher. The opinion of these people relative to the "significance" of the behavioral change may be more important than any statistical treatment.

Replication is a key to single subject designs. Studies focus intensely on a limited number of subjects in order to determine which procedures can produce changes in behavior. These procedures should then be repeated with additional subjects, behaviors, and situations in order to strengthen the validity of the procedures and allow for some generalization to occur.

RESULTS AND DISCUSSION

The interobserver reliability for event recording on teacher behavior resulted in 96% agreement for total number of events observed, 93% agreement for classifying events for each subject, and 87% or better agreement for each of the seven student teacher behavior categories. All percentages were within the 85% or better acceptable range for behavioral research (Siedentop, 1976). Placheck reliability on pupil behavior yielded a 95% agreement on appropriate/inappropriate behavior and a 93% agreement on active/inactive behavior.

The rates per minute for the seven student teacher behaviors and the percentage of pupils engaged in the two pupil behavior categories were plotted to form a profile of both teaching behaviors and pupil behaviors (Figures 2 and 3). These behavior profiles illustrate

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Insert Figures 2 and 3 Here

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the way that each student teacher and the pupils in their respective classes behaved in the physical education environment during both baseline and intervention conditions. The plotting of these behavior rates shows the individual style of each subject and his/her class.

In addition, a multiple baseline (Figure 4) was plotted to compare each behavior category across all seven subjects.

Insert Figure 4 Here

Both the behavior profiles and the multiple baselines indicate large increases or decreases in most categories of behavior due to the intervention package. In other behavior categories, the changes were very small.

The mean baseline rate, mean intervention rate, rate of increase or decrease, and percent increase or decrease were calculated by category for all seven subjects and for pupil categories (Tables 1, 2, and 3).

Insert Tables 1, 2, and 3 Here

Table 1 points out the changes that occurred in the positive general feedback behavior category. The teacher behavior categories that showed the largest increases included: positive general feedback for movement skill attempts, positive specific feedback for movement skill attempts, specific corrective feedback for movement skill attempts, and use of pupil's first names. Smaller increases occurred in the categories of positive reactions to on-task pupil behavior and general corrective feedback for movement skills. A small decrease occurred in the negative reactions to off task pupil behavior category. The direction of change for each of these teacher behaviors was the direction desired by the experimenter.

Subjects were asked to increase their positive reactions to the on task non-skill related pupil behaviors (category 1) and reduce their negative reactions to off task non-skill related pupil behaviors (category 2). This was done in an attempt to create a positive environment with the teacher's focus on things that pupils were doing correctly. All four feedback categories (categories 3-6) for movement skill attempts were increased in order to provide pupils with more information on their skill attempts. Emphasis was placed on the specific categories (categories 4 and 6) because specific information seems to enhance the learning of motor skills (Bilodeau and Bilodeau, 1961). Subjects were also asked to increase their use of pupil's first names in order to show pupils that the teacher knew their names and was concerned about their development.

The weekly and terminal goals were established after discussing the baseline rates with the subject and the cooperating teacher. These goals were developed specifically for each teaching situation after considering such variables as the baseline information, the type of pupils, the type of activity, the instructional strategies, and the behavior of the cooperating teacher. The goals were specific to each individual and their teaching situation.

Tables 2 and 3 illustrate the important categories of pupil behavior. In the active learning category, six of seven classes showed at least a small increase in the desirable direction. Student teachers were asked to increase the percentage of pupils actively involved because it was felt that this activity should help accomplish several objectives of the class, i.e., physical fitness and motor skills. The multiple baselines show that the changes were caused by the intervention. In the appropriate/inappropriate category, Table 3

shows that six of seven classes also showed at least a slight increase in appropriate behavior. Student teachers were asked to increase the appropriate pupil behavior also because it seemed that an increase would have a positive impact on the learning environment. The changes in appropriate pupil behavior were relatively small, probably because of existing high baseline rates of appropriate behavior.

CONCLUSIONS

Within the limits of this study and as a result of analyzing data through student teacher profiles, pupil profiles, multiple baselines and behavior change tables, the following conclusion was drawn.

The data based observation system combined with the competency based format with specific weekly and terminal goals exerted a measure of accountable control over the behavior of seven student teachers and the behavior of their classes that were observed. This conclusion was supported by the following data:

1. Six of seven student teachers made a large increase in positive reaction behaviors to on task pupil behavior;
2. All seven student teachers decreased in negative reactions to off task pupil behavior;
3. All seven student teachers made a large increase in positive general feedback for movement skill attempts;
4. All seven student teachers made a large increase in positive specific feedback for movement skill attempts;
5. Five of seven student teachers increased in general corrective feedback for movement skill attempts;
6. All seven student teachers made a large increase in specific corrective feedback for movement skill attempts;
7. All seven student teachers made a large increase in the use of pupils' first names;

8. Five of seven student teachers' classes made a large gain in the percentage of pupils engaged in active learning;

9. Six of seven student teachers' classes made a small gain in the percentage of pupils engaged in appropriate behavior.

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List of Figures and Tables

Figure 1 Order and Schedule of Intervention

Figure 2 Profile of Behavior Rates for Subject Three

Figure 3 Profile of Behavior Rates for Subject Three

Figure 4 Rate of Positive General Feedback for Seven Student Teachers

Table 1 Rate and Percentage Change for Positive General Feedback

Table 2 Rate and Percentage Change for Students' Active Learning

Table 3 Rate and Percentage Change for Students' Appropriate Behavior

TABLE 1

RATE AND PERCENTAGE CHANGE FOR POSITIVE GENERAL FEEDBACK

BEHAVIOR: (+)GENERAL FEEDBACK	MEAN RATE/MINUTE BASELINE	MEAN RATE/MINUTE INTERVENTION	INCREASE DECREASE	% INCREASE or DECREASE
S_1	.17	1.29	+ 1.12	+ 659%
S_2	.13	1.08	+ .95	+ 731%
S_3	.19	.91	+ .72	+ 379%
S_4	.20	1.25	+ 1.05	+ 525%
S_5	.23	.88	+ .75	+ 326%
S_6	.23	1.56	+ 1.33	+ 578%
S_7	.23	.92	+ .69	+ 300%

TABLE 2

RATE AND PERCENTAGE CHANGE FOR STUDENTS' ACTIVE LEARNING

BEHAVIOR: ACTIVE LEARNING	MEAN PERCENTAGE BASELINE	MEAN PERCENTAGE INTERVENTION	MEAN INCREASE or DECREASE	% INCREASE or DECREASE
C_1	25.0	79.4	+ 54.4	+ 218%
C_2	68.0	65.0	- 3.0	- 4%
C_3	77.0	82.0	+ 5.0	+ 6%
C_4	64.6	66.0	+ 1.4	+ 2%
C_5	61.5	88.6	+ 27.1	+ 44%
C_6	63.0	81.2	+ 18.2	+ 29%
C_7	54.3	72.4	+ 18.1	+ 33%

TABLE 3

RATE AND PERCENTAGE CHANGE FOR STUDENTS' APPROPRIATE BEHAVIOR

BEHAVIOR: APPROPRIATE CLASS BEHAVIOR	MEAN PERCENTAGE BASELINE	MEAN PERCENTAGE INTERVENTION	MEAN INCREASE or DECREASE	% INCREASE or DECREASE
C_1	84.0	95.0	+ 11.0	+ 13%
C_2	94.0	95.4	+ 1.4	+ 1%
C_3	84.8	92.6	+ 7.8	+ 9%
C_4	89.5	91.5	+ 2.0	+ 2%
C_5	91.0	98.2	+ 7.2	+ 8%
C_6	93.1	97.6	+ 4.5	+ 5%
C_7	92.6	91.8	- 0.8	- 1%

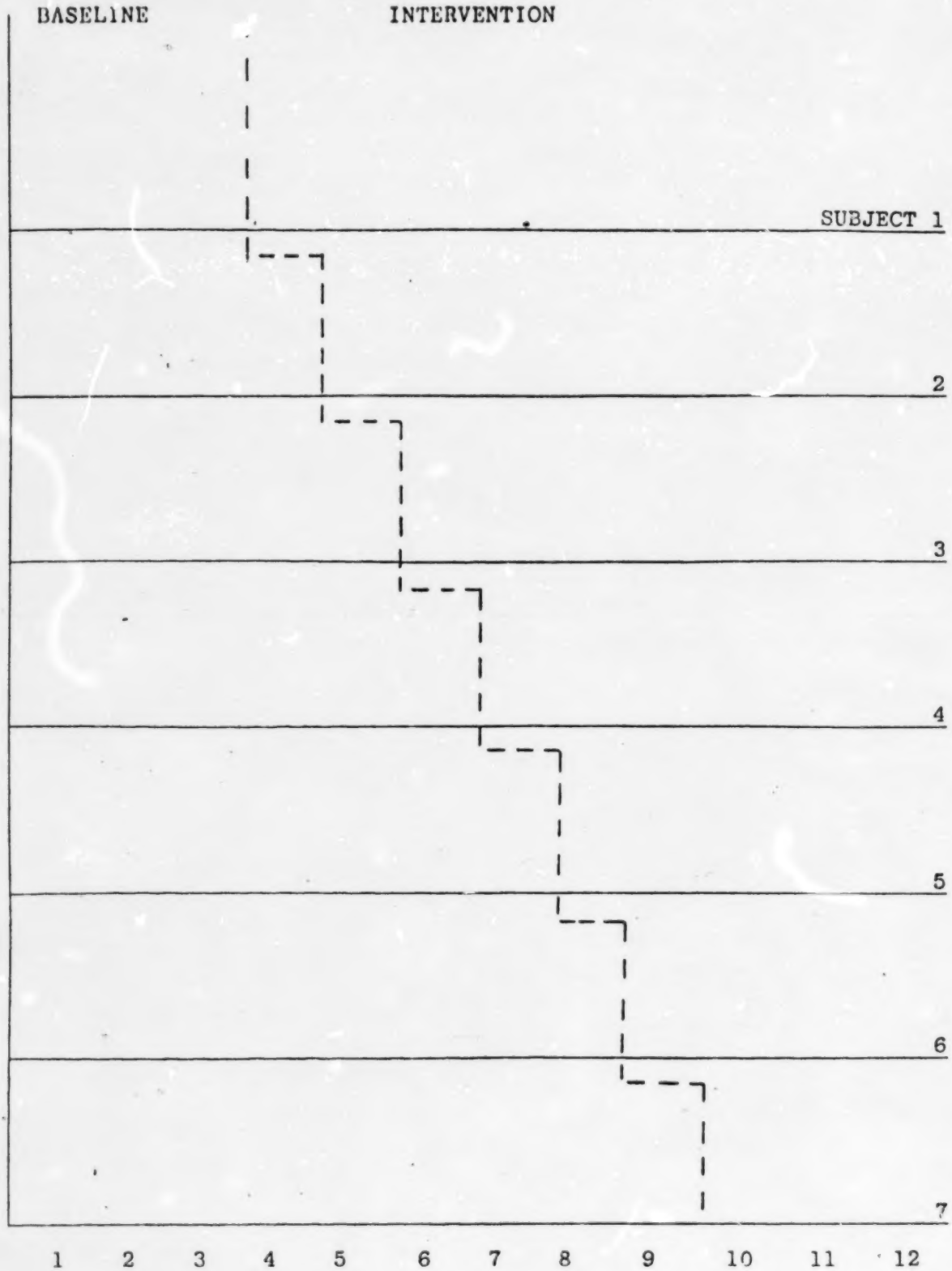


FIGURE 1 - ORDER AND SCHEDULE OF INTERVENTION

FIGURE 2 - PROFILE OF BEHAVIOR RATES FOR SUBJECT 3

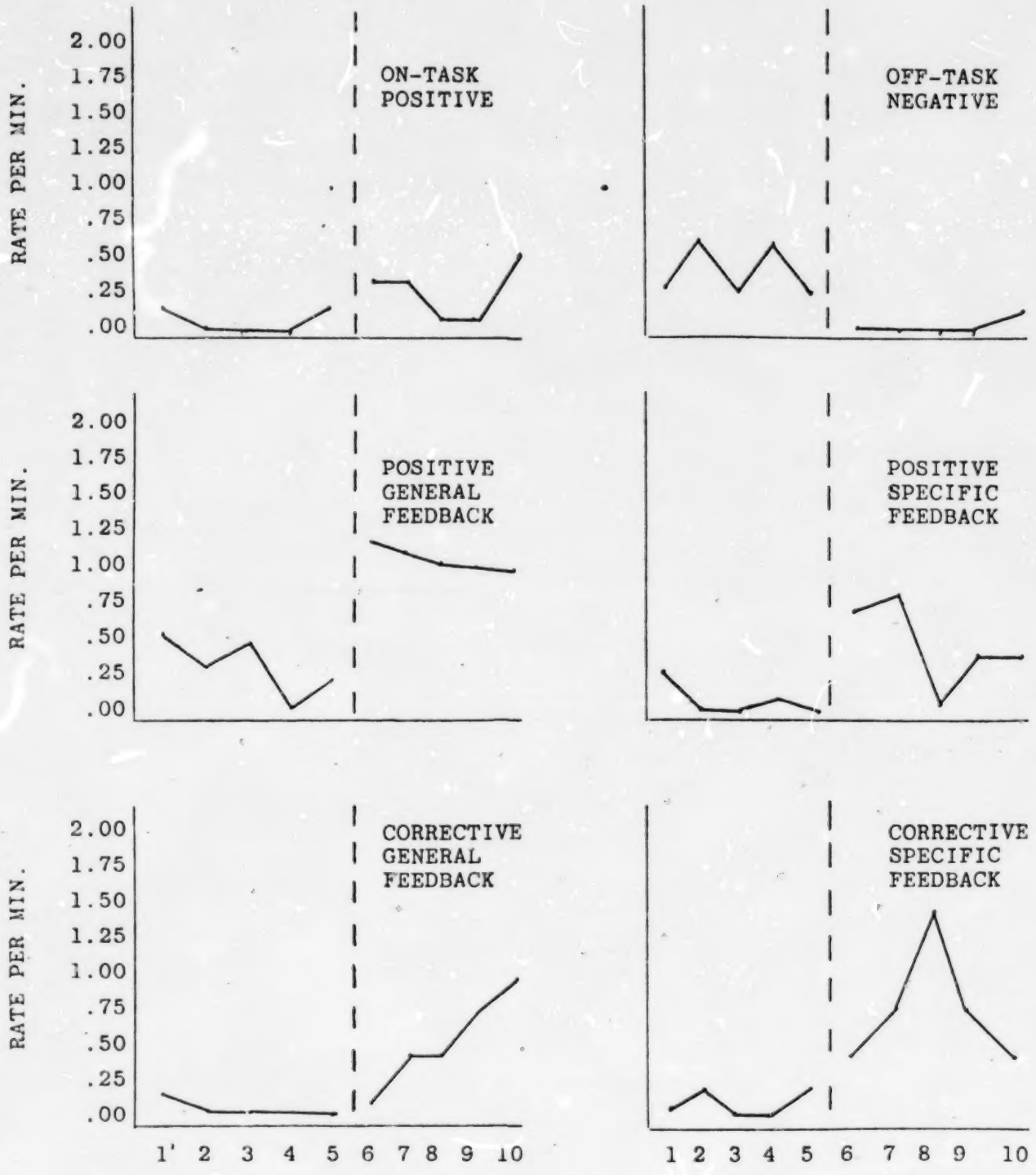
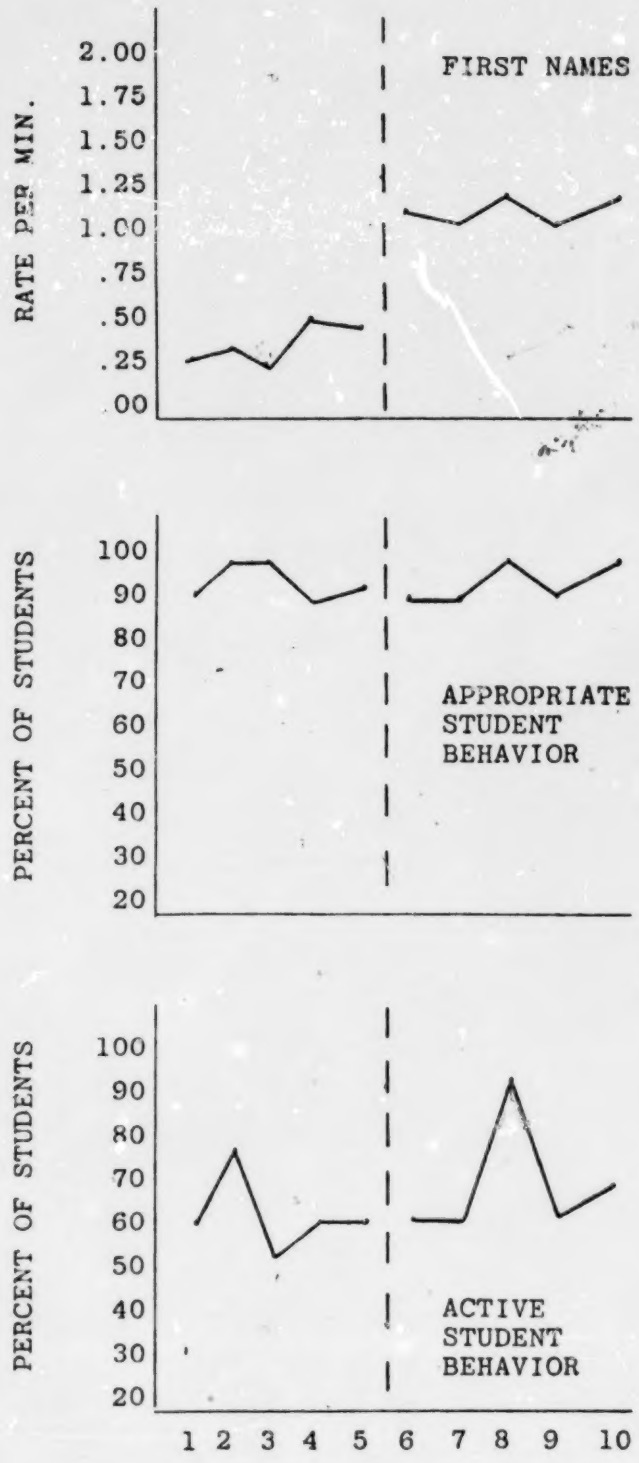


FIGURE 3 - PROFILE OF BEHAVIOR RATES FOR SUBJECT 3



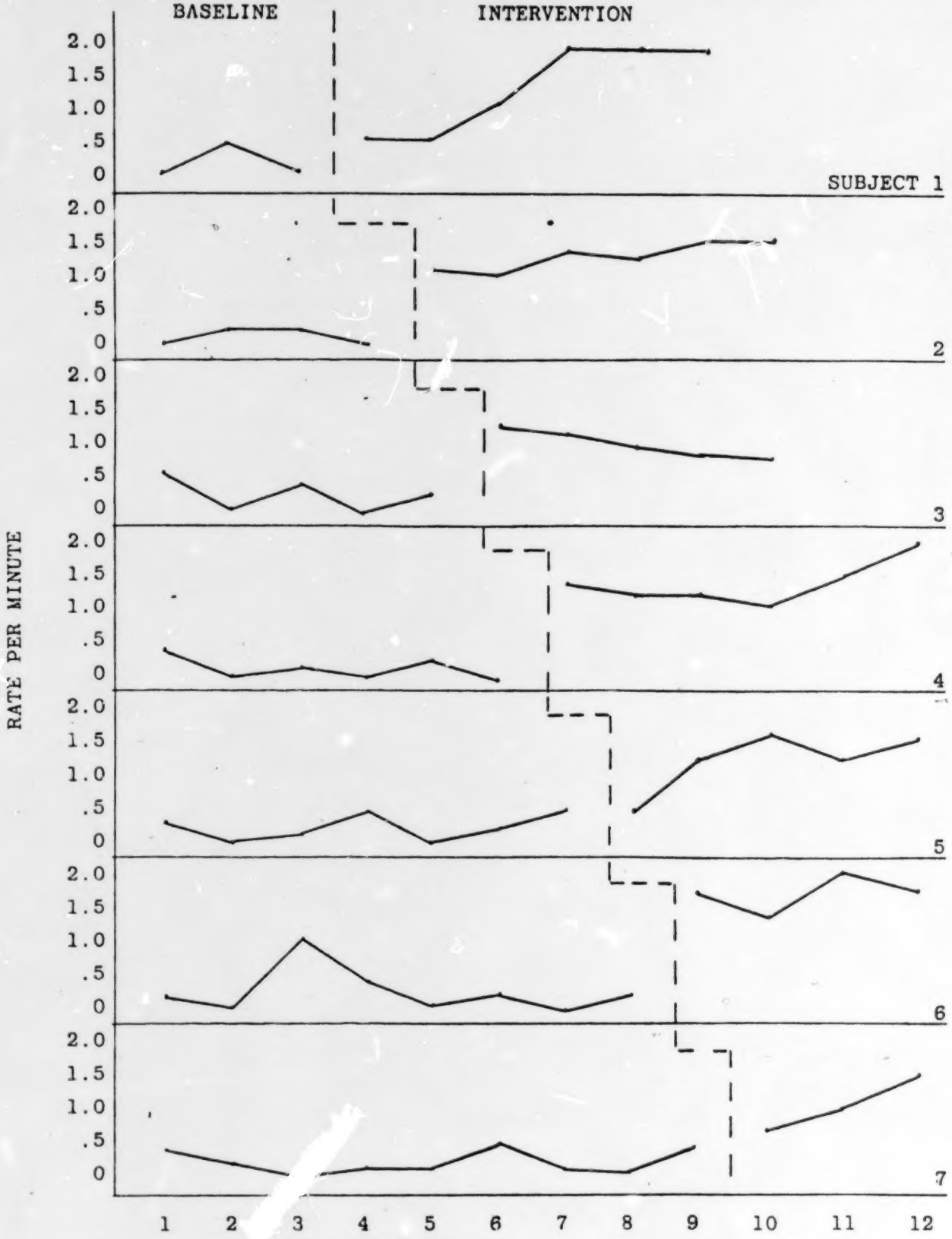


FIGURE 4 - RATE OF POSITIVE GENERAL FEEDBACK FOR SEVEN STUDENT TEACHERS